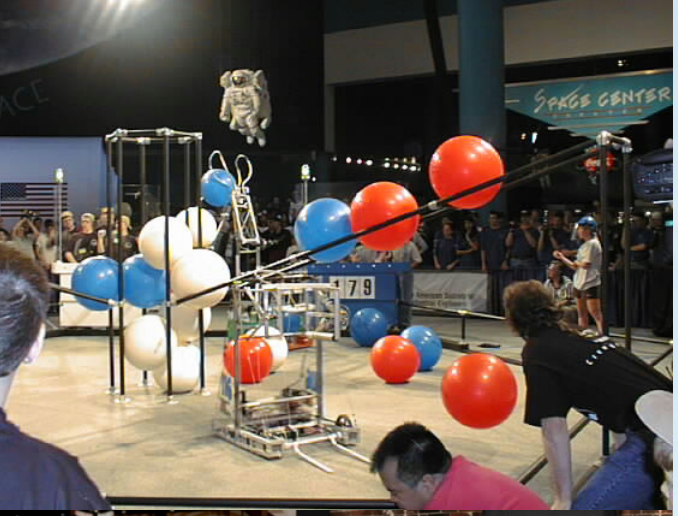
Backup



Our FY 2011 Plans

- Continue supporting the program through the SMD *Robotics Alliance Project*
- Sponsor >300 FRC teams
- Mentor highly diverse set of >10,000 students
- Sponsor/host 5 regional competitions
- Continue hands-on participation by engineers and mentors from every NASA center
- Expand community outreach
- Show off NASA capabilities
- Investigate NASA scholarship options
- Our annual challenge: Can the centers (with engineers and technologists) beat the Headquarters team (with bureaucrats and accountants)?

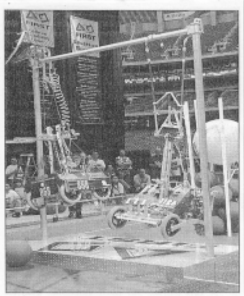
College/University Participation

National Media Coverage

THE NATION'S NEWSPAPER
USA TODAY
NO. 1 IN THE USA

Monday, April 19, 2004

A better Life
Health, education & science



Mr. Roboto lives: Some of the action at the FIRST Robotics Competition Championship in Atlanta.

Poofs! You've won a robotic competition!

The "Cheesy Poofs" of Bellarmine College Preparatory School in San Jose won highest honors Saturday at the 2004 FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition Championship in Atlanta's Georgia Dome. Teams of high school students, mentors, parents and volunteers used a common kit to design a remote-controlled robot to race around a field collecting balls and passing them to human players to shoot into fixed and moveable goals. The "Cheesy Poofs" beat almost 300 teams for the FIRST Chairman's Award for embodying the purpose and goals of FIRST. Division winners: "B.E.A.S.T." from Clark, Gavit, Hammond and Morton High Schools, Hammond, Ind.; "Robodogs" from Southeast Raleigh High School, Raleigh, N.C.; and "Martians" from Goodrich (Mich.) High. FIRST, which awards more than $4.6 million in scholarships from colleges and companies, was created by inventor Dean Kamen in 1989 to inspire an appreciation of science and technology in young people.

The McGraw-Hill Companies
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CNN

PC MAGAZINE

Discovery CHANNEL
entertain your brain

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EDITORIAL COMMENTARY
THOMAS G. DONLAN

Robots to the Rescue

An inventor takes on nothing less than the transformation of American youth

"We have seen the future, and it works." At least, we hope it's the real future, because what we saw a week ago in the Georgia Dome in Atlanta was an inspiring combination of intelligent problem-solving and self-disciplined teamwork. It was the championship round of the 14th annual "FIRST" Robotics Competition.

About 10,000 high school and middle-school engineers, mostly mentored and coached by adult engineering professionals, built robots and brought them to the stadium to play a unique game.

FIRST is a foundation whose name signifies "For Inspiration and Recognition of Science and Technology." Dean Kamen, engineer and inventor, created it as a tool for peaceful revolution. He is appalled by the American hero-worship of professional sports figures and entertainment personalities.

"We have kids spending years and years getting better and better at bouncing a ball," says Kamen, "which does not improve our quality of life." He says businesses, especially the businesses that sponsor sports and television entertainment, ought to have something else to sponsor—something that will improve the lives of youth and make America a richer and better country.

Trying to attract sponsors, Kamen tells company executives, "What you are good at is creating demand. Why don't you agree that you will make science and engineering as interesting as you have made sports and entertainment? You need to give more options."

Making New Choices

Since there were no options for sponsors that made inventing look cool, Kamen set about inventing one. Here's how it worked in the 2005 version:

On a particular day last January, each young team received a kit with motors, hydraulic activators, radio controllers and other materials—and the rules of this year's game. The FIRST competition is not a demolition derby—robots must maneuver around obstacles and score points by carrying objects and placing them in goals. And they work in teams—it's never "every robot for itself." (Every year the rules and tasks are different—changing the game forces experienced teams to create new robots with new special abilities.)

In the 2005 game, the robots would have to pick up open tetrahedrons (pyramids with three triangular sides and a triangular base), carry them and then place them on pyramid-shaped goals. Most of the goals would be five feet high, but there was extra credit for putting tetras on one seven-foot-high goal in the middle of the playing area.

Nearly every team created an extensible arm on some kind of moving platform. Some built the arms to articulate like a human arm, others used telescoping tubes. Some used gears; some used hydraulic actuators; some used wire and electric winches. The automotive designs included tank treads as well as four-wheel, six-wheel and eight-wheel designs, some geared up for speed, others geared down for power. A few teams built defensive specialists, heavyweight carpet-sweepers designed entirely to block or tip an opposing alliance's robots while relying on partners to score.

The teams had six weeks to design, build, test and practice operating their robots. They had to follow rules limiting the size, weight and cost of their robots. On deadline day, all robots had to be crated up and shipped to the site of one of FIRST's 30 regional competitions.

Engineering always requires solving complex problems on time and within budget, and usually there isn't enough time or enough money, says Woodie Flowers, a mechanical-engineering professor at M.I.T. who has been with FIRST since the first year. FIRST has been designed to simulate a real engineering experience and stimulate real creative responses.

Building Character With Robots

Just as Boy Scouting and Girl Scouting aren't just about woodcraft and other outdoorsy skills, and Outward Bound isn't just about survival in the mountains or the sea, FIRST isn't just about robots.

Like other challenging activities for youth, FIRST is an adult conspiracy to build character. "FIRST is not about robotics; it's the campfire around which the tribe gathers," says Flowers. "The

(over please)

Discover

The Super Bowl of Smart

Mamas, don't let your babies grow up to be slackers when the difference between success and failure is as obvious as building a robot

BY BRAD LEMLEY PHOTOGRAPHY BY BETH PERKINS

GAEL FORCE IS NOT ONE OF YOUR PRETTY-BOY ROBOTS. FIVE FEET TALL, THREE feet wide, weighing in at 127 scrappy pounds, it features a boxy aluminum frame, 27 steel gears, 14 greasy sprockets, two toy-car motors, and battle-scratched body armor. In a world of increasingly cutesy automatons—think of Sony's AIBO simulated dog—it has the visual appeal of a sump pump. • But on a sunny afternoon last April, Gael Force was eating the lunch of two attractive, color-coordinated robots on a small playing field in Atlanta's Georgia Dome. In the course of a two-minute contest, it gathered up and delivered six small balls, deftly placed a beach-ball-size

Student-built robots vie for the high bar at the First Robotics Competition nationals at the Georgia Dome in Atlanta. TFS, by Mississippi's Gulfport High School, is on the left; May Day, by Connecticut's Suffield and Windsor Locks High Schools, is on the right.

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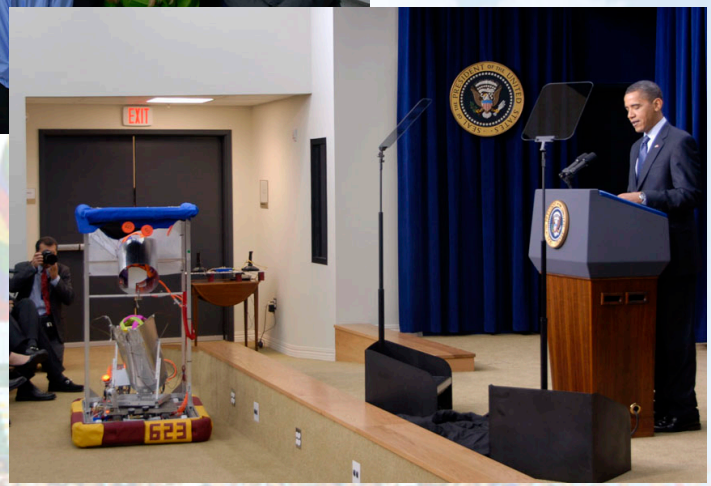
TURNER STUDIOS

Robotics Alliance Project (RAP)



- NASA Headquarters/Herndon High School robotics competition team invited to White House as the President presents the new STEM education “Educate To Innovate” initiative on November 23
- The team is one of 300 FIRST Robotics Competition teams supported by the NASA (SMD) Robotics Alliance Project.
- RAP is the largest sponsor of teams participating in the FIRST Robotics Competition, and a major sponsor of the BotBall and VEX robotics competition programs.
- NASA engineers at every NASA center participate with RAP-sponsored teams
  - Engineers directly mentor and work side-by-side with the students
  - Construction of the robot used as a vehicle to teach engineering practices
  - Working directly with ~1600 students on local “house teams” and indirectly with thousands more
- RAP repeatedly cited as example of excellent government-community collaboration to engage

Robotics Alliance Project (RAP)

- NASA Headquarters/Herndon High School robotics competition team will help the President present several new STEM education initiatives on Tuesday, November 10
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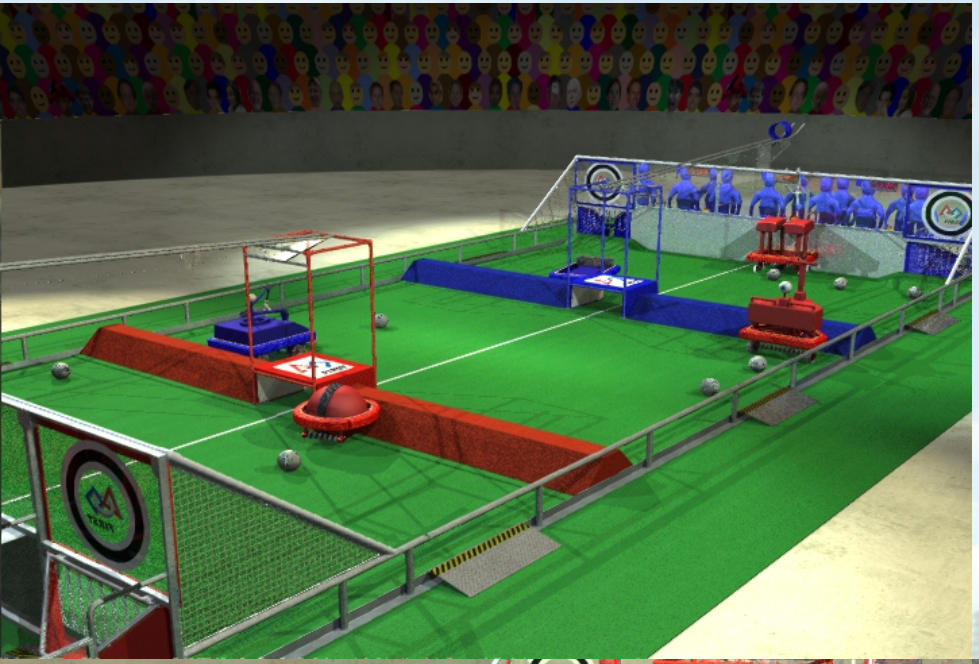
The Games



The challenges are renewed every year.

For FRC in 2011 – In 2 minutes, robots play “bumpy soccer” by scoring goals over an obstacle-covered field, and then hang from the mid-field towers at the end for bonus points